

SOLAR CELL WITH HIGH-TEMPERATURE FRONT
ELECTRICAL CONTACT, AND ITS FABRICATION

ABSTRACT OF THE DISCLOSURE

A solar cell has an active semiconductor structure and a back electrical contact overlying and contacting an active semiconductor structure back side. A front electrical contact is applied overlying and contacting the active semiconductor structure front side. The front electrical contact has multiple layers including a titanium layer overlying and contacting the active semiconductor structure front side, a diffusion layer overlying and contacting the titanium layer, a barrier layer overlying and contacting the diffusion layer, and a joining layer overlying and contacting the barrier layer. The front electrical contact may be applied by sequentially vacuum depositing the titanium layer, the diffusion layer, the barrier layer, and the joining layer in a vacuum deposition apparatus in a single pumpdown from ambient pressure. A front electrical lead is affixed overlying and contacting an attachment pad region of the front electrical contact.